Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A control apparatus for an automotive generator having a field coil, comprising:

a switching device for turning on and off current supply to the field coil of the automotive generator;

a flywheel diode connected in parallel with the field coil;

a voltage detection circuit for outputting an instruction signal to turn on and off the switching device so that an output voltage of the automotive generator is regulated to a specified adjusted voltage; and

a drive circuit for driving the switching device, when the instruction signal instructing the switching device to turn on is input from the voltage detection circuit, by only flowing a specific current to a control terminal of the switching device to raise a control terminal voltage until a terminal voltage of the field coil exceeds a specified value and applying a voltage higher than the output voltage of the automotive generator to the control terminal after the terminal voltage of the field coil exceeds the specified value.

2. (Currently Amended) The control apparatus as in claim 1, wherein the ~~specific voltage~~specified value compared with the terminal voltage of the field coil is greater than a reverse bias voltage of the flywheel diode.

3. (Original) The control apparatus as in claim 1, wherein the switching device is a MOS transistor having a gate terminal as the control terminal.

4. (Currently Amended) The control apparatus as in claim 3 , wherein the drive circuit includes:

a first current supply circuit for supplying the specific current to the gate terminal of the MOS transistor;

a charge pump circuit;

a second current supply circuit for supplying a current to the charge pump circuit; and

a signal circuit for intermittently operating the charge pump circuit,

wherein, when a conduction instruction signal is input from the voltage detection circuit, the drive circuit supplies the specific current from the first current supply circuit to the gate terminal until the terminal voltage of the field coil exceeds the specified value, and supplies an output voltage of the charge pump circuit to the gate ~~voltage~~ terminal after the terminal voltage of the field coil exceeds the specified value.

5. (Original) A control apparatus for an automotive generator having a field coil comprising:

a switching device for turning on and off current supply to the field coil of the automotive generator;

a flywheel diode connected in parallel with the field coil;

a voltage detection circuit for outputting an instruction signal to turn on and off the switching device so that an output voltage of the automotive generator is regulated to a specified adjusted voltage; and

a drive circuit for driving the switching device, when the instruction signal instructing the switching device to turn on is input from the voltage detection circuit, by applying a voltage higher than the output voltage of the automotive generator to a control terminal of the switching device,

wherein the drive circuit includes a charge pump circuit having an even number of capacitor stages, a current supply circuit for supplying a current to the charge

pump circuit, a signal circuit for intermittently operating the charge pump circuit, and a diode connected in a forward direction from an input to output terminals of the charge pump circuit.

6. (Original) The control apparatus as in claim 5, wherein the switching device is a MOS transistor having a gate terminal as the control terminal.

7. (Currently Amended) The control apparatus as in claim 6, wherein the MOS transistor has a source voltage connected to the field coil; and

the current supply circuit sets the current according to ~~a~~ the source voltage of the MOS transistor.

8. (New) A control apparatus for an automotive generator having a field coil, comprising:

a switching device for turning on and off current supply to the field coil of the automotive generator;

a flywheel diode connected in parallel with the field coil;

a voltage detection circuit for outputting an instruction signal to turn on and off the switching device so that an output voltage of the automotive generator is regulated to a specified adjusted voltage; and

a drive circuit for driving the switching device, when the instruction signal instructing the switching device to turn on is input from the voltage detection circuit, by only flowing a specific current to a control terminal of the switching device to raise a control terminal voltage until a terminal voltage of the field coil exceeds a specified value and applying a voltage higher than the output voltage of the automotive generator to the control terminal after the terminal voltage of the field coil exceeds the specified value, wherein the specific value compared with the terminal voltage of the field coil is greater than a reverse bias voltage of the flywheel diode.

9. (New) A control apparatus for an automotive generator having a field coil, comprising:

a switching device for turning on and off current supply to the field coil of the automotive generator;

a flywheel diode connected in parallel with the field coil;

a voltage detection circuit for outputting an instruction signal to turn on and off the switching device so that an output voltage of the automotive generator is regulated to a specified adjusted voltage; and

a drive circuit for driving the switching device, when the instruction signal instructing the switching device to turn on is input from the voltage detection circuit, by only flowing a specific current to a control terminal of the switching device to raise a control terminal voltage until a terminal voltage of the field coil exceeds a specified value and applying a voltage higher than the output voltage of the automotive generator to the control terminal after the terminal voltage of the field coil exceeds the specified value, wherein the switching device is a MOS transistor having a gate terminal as the control terminal, and wherein the drive circuit includes:

a first current supply circuit for supplying the specific current to the gate terminal of the MOS transistor;

a charge pump circuit;

a second current supply circuit for supplying a current to the charge pump circuit; and

a signal circuit for intermittently operating the charge pump circuit,

wherein, when a conduction instruction signal is input from the voltage detection circuit, the drive circuit supplies the specific current from the first current supply circuit to the gate terminal until the terminal voltage of the field coil exceeds the specified

value, and supplies an output voltage of the charge pump circuit to the gate terminal after the terminal voltage of the field coil exceeds the specified value.

REMARKS

Claims 1-9 are pending in this application. By this Amendment, claims 1, 2, 4 and 7 are amended and claims 8 and 9 are added. Claim 8 corresponds to the subject matter recited in claims 1 and 2. Claim 9 corresponds to the subject matter recited in claims 1, 3 and 4. Thus, no new matter is added.

Applicants appreciate the courtesies shown to Applicants' representative by Examiner Gonzalez in the July 14 telephone interview. Applicants' separate record of the substance of the telephone interview is incorporated into the following remarks.

I. Address Change

A submission of Power of Attorney by Assignee requesting all correspondence in connection with this application be sent to Oliff & Berridge, PLC was filed on February 15, 2002. Applicants respectfully request all further communications be forwarded to Oliff & Berridge, PLC in accordance with the Notice Regarding Power of Attorney mailed on February 26, 2002.

II. Allowable Subject Matter

Applicants appreciate the indication of allowable subject matter in claims 2 and 4. Claim 2 is allowable if rewritten to overcome the rejection under 35 U.S.C. §112, second paragraph, and to include all of the features of its base claim and any intervening claims. Claim 4 is allowable if rewritten in independent form to include all of the features of its base claim and any intervening claims. Applicants submit that claims 2 and 4 are allowable for at least the reasons discussed below.

III. Claim Rejections Under 35 U.S.C. §112

Claims 2, 4 and 7 are rejected under 35 U.S.C. §112, second paragraph. Claims 2, 4 and 7 are amended. Thus, Applicants respectfully request the rejection of claims 2, 4 and 7 under 35 U.S.C. §112, second paragraph, be withdrawn.

IV. Claim Rejections Under 35 U.S.C. §103

Claims 1, 3 and 5-7 are rejected under 35 U.S.C. §103(a) as unpatentable over U.S. Patent 4,831,322 to Mashino et al. (Mashino) in view of U.S. Patent 5,144,220 to Iwatani et al. (Iwatani). The rejection is respectfully traversed.

As discussed during the July 14 telephone interview, Applicants assert that neither Mashino nor Iwatani, whether considered alone or in combination, disclose or suggest all of the features recited in the rejected claims. For example, although Mashino teaches a boost circuit 17, Mashino fails to teach a drive circuit for driving the switching device, when the instruction signal instructing the switching device to turn on is input from the voltage detection circuit, by only flowing a specific current to a control terminal of the switching device to raise a control terminal voltage until a terminal voltage of the field coil exceeds a specified value and applying a voltage higher than the output voltage of the automotive generator to the control terminal after the terminal voltage of the field coil exceeds the specified value, as recited in the rejected claims. In other words, Mashino fails to disclose or suggest a two-stage control for a field coil. Furthermore, Mashino fails to disclose or suggest continuously driving a switching device without repeatedly turning on and turning off until the field coil voltage rises to a specified voltage.

Iwatani also fails to teach such a two-stage control system. As discussed during the telephone interview, claims 1-7 are allowable. Thus, Applicants respectfully request the rejection of claims 1, 3 and 5-7 be withdrawn.

V. New Claims

Applicants assert that neither Mashino nor Iwatani, whether considered alone or in combination, disclose or suggest the features recited in new claims 8 and 9. For example, the combination of references does not disclose or suggest a drive circuit for driving the switching device when the instruction signal instructing the switching device to turn on its

input from the voltage detection circuit, by only flowing a specific current to a control terminal of the switching device to raise a control terminal voltage until a terminal voltage of the field coil exceeds a specified voltage and applying a voltage higher than the output voltage of the automotive generator to control the terminal after the terminal voltage of the field coil exceeds a specified value.

VI. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-9 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,

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JAO:JWF/ldg

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